

REMARKS

The Office Action mailed December 11, 2002 has been received and the Examiner's comments carefully reviewed. Claims 3, 12, and 20-23 have been allowed. Applicant thanks the Examiner for this notification. Claims 1, 10, 13, 14, and 17-19 have been amended. Applicant has included herewith a document entitled, "VERSION WITH MARKINGS TO SHOW CHANGES MADE" to indicate how the claims have been amended. Claims 24-36 have been added. No new subject matter has been added. Claims 1, 3-10, 12-21 and 23-36 are currently pending. For at least the following reasons, Applicant respectfully submits that the pending claims are in condition for allowance.

Support for new independent claims 27 and 29 is found in the specification, for example, on page 15, lines 5-17, and in FIGS. 9-12 illustrating braking outputs relative to pedal positions. Support for new independent claim 33 is found in the specification, for example, on page 10, lines 1-5, page 14, lines 1-4, and in FIGS. 9-12. Claims 24-26, 28, 30-33, and 35-36 are dependent claims and are also supported by the specification.

Examiner Interview

Applicant's below signed representative conducted a telephone interview with Examiner Pezzlo on February 5, 2003. The interview was directed toward applicability of the Imoto reference cited by the Examiner, and proposed claim amendments to place the claims in condition for allowance. No agreement was reached regarding the applicability of cited art, although the Examiner indicated that he would like to further consider arguments presented in the next Response. The Examiner is thanked for his time.

Rejections Under 35 U.S.C. §102

The Examiner rejected claims 1, 4-10, and 13-19 under 35 U.S.C. §102(b) as being anticipated by Imoto et al. (U.S. Patent 4,755,008). Applicant respectfully traverses these rejections, but has amended claim 1 to advance this application to allowance. Applicant reserves the right to pursue the original subject matter via a continuation application.

Claim 1 has been amended to recite that the secondary valve assembly is integral with the primary valve assembly. Applicant's specification defines the integral limitation recited in claim 1. Specifically, the specification states that "[b]y 'integral,' it is generally meant that the secondary

valve assembly 104 and the primary valve assembly 102 are constructed and arranged such that they are integrated and formed as part of a single structure."

Imoto does not disclose a secondary valve assembly integral with a primary valve assembly. In contrast, the braking system includes a pressure modulator 201 that is non-integral with a master cylinder 12. That is, the pressure modulator 201 is not formed as part of a single structure of the master cylinder 12. Rather a pilot conduit 227 interconnects the structure of the pressure modulator 201 with the structure of the master cylinder 12.

Because Imoto fails to disclose the pressure modulator integral with the master cylinder, defined by the specification as a single structure, Applicants respectfully submit that claim 1 is patentable. Claims 4-9 depend upon claim 1 and are therefore also patentable.

II. Claim 10

Claim 10 has been amended to recite a brake valve including secondary valve assembly having an actuator that engages and actuates a second spool valve to increase the braking output produced by a primary valve assembly.

Imoto discloses a braking system having a pressure modulator 201 that can only decrease the braking output produced by a master cylinder 12. In particular, the master cylinder 12 generates a controlled fluid pressure that is transmitted in chamber 225 to move member 221 to the right. See FIG. 6. In this position the inlet chamber 236 is in fluid communication with the outlet chamber 228. The fluid pressure in outlet chamber 228 is transferred to pressure chamber 231. As pressure increases in pressure chamber 231, the member is moved to the left until the second spool land 223 interrupts fluid communication between the inlet and outlet chambers 236 and 228. If the pressure in the pressure chamber 231 is too high, the valve member 221 moves further to the left to open fluid communication between the outlet and a low pressure chambers 228 and 239. See column 13, lines 8-28.

Thus, the pressure modulator 201 is not configured to increase the braking output of the master cylinder 12, rather the pressure modulator 210 can only maintain or decrease braking output produced by the master cylinder 12.

Because Imoto fails to disclose a secondary valve assembly configured to increase braking output of a primary valve assembly, Applicants respectfully submit that claim 10 is patentable. Claims 13-18 depend upon claim 10 and are therefore also patentable.

It is noted that claim 19 has been amended to properly depend upon claim 21. Applicant submits that claim 19 is also patentable.

III. New Claims 24-26

New claim 24 depends upon claim 1. Claim 24 recites that the hydraulic braking system includes a valve body. In light of the comments regarding the patentability of claim 1, Applicant submits that dependent claim 24 is patentable.

New claims 25 and 26 depend upon claim 10. Claim 25 recites that the secondary valve assembly is also configured to decrease the braking output of the primary valve assembly. Claim 26 recites that the actuator is a solenoid actuator. In light of the comments regarding the patentability of claim 10, Applicant submits that dependent claims 25 and 26 are patentable.

IV. New Claims 27-36

New claim 27 recites a braking system having a pedal, a primary valve assembly, and a secondary valve assembly. The primary valve includes a spring arrangement and a pressure fluid chamber, and is configured to provide a first braking output and a first pedal feedback force resulting from compression of the spring arrangement. The secondary valve assembly is in fluid communication with a fluid pressure chamber of the primary valve assembly. The secondary valve assembly is configured to provide a second braking output and a second pedal feedback force corresponding to both compression of the spring arrangement and pressurization of the fluid pressure chamber of the primary valve assembly. By this arrangement, the operator can "feel" two different feedback forces from the pedal (corresponding to two different braking outputs) while the pedal remains in one operating position. Applicant submits that none of the cited references disclose the features of independent claim 27 or dependent claim 28.

New claims 29-33 similarly recite a braking system providing a first and second braking outputs and first and second force that act upon an actuation mechanism, both first and second conditions occurring when the a manual control input provided by the actuation mechanism is operated at a first input value. Applicant submits that none of the cited references disclose the features of independent claim 29 or dependent claims 30-33.

New claims 34-36 recite a braking system defining an operating ratio of pedal feedback force to operating position. The braking system including a secondary valve configured to operate with a primary valve such that the second valve increases the operating ratio while the pedal

remains in a first operation position. Applicant submits that none of the cited references disclose the features of independent claim 34 or dependent claims 35 and 36.

Allowable Subject Matter

The Examiner indicated that claim 3, 12 and 20-23 are allowable. Applicant notes that claims 22 and 23 depended upon claims 1 and 10 and recited that the secondary valve assembly is integral with the primary valve assembly. Applicants assume that these claims were indicated as allowable in error. Applicants asked that the Examiner immediately notify the Applicants if this assumption is wrong. Claim 22 has been cancelled, as the subject matter of claim 22 has been incorporated into claim 1.

SUMMARY

It is respectfully submitted that each of the presently pending claims (claims 1, 3-20, and 23-36) is in condition for allowance and notification to that effect is requested. The Examiner is invited to contact Applicant's representative at the below-listed telephone number if it is believed that prosecution of this application may be assisted thereby.

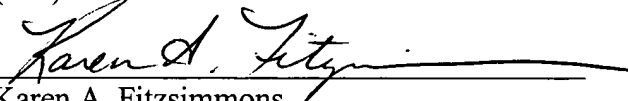
Although certain arguments regarding patentability are set forth herein, there may be other arguments and reasons why the claimed invention is patentably distinct. Applicant reserves the right to raise these arguments in the future.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, Minnesota 55402-0903
(612) 332-5300



Date: April 11, 2003


Karen A. Fitzsimmons
Reg. No. 50,470
KAF:PSTklg/db

Version With Markings To Show Changes Made

Claim 22 has been cancelled without prejudice.

Claims 1, 10, 13, 14, and 17-19 have been amended as follows:

1. (Twice Amended) A hydraulic braking system for supplying a braking output to a vehicle having at least one wheel, the braking system comprising:
 - (a) a primary valve assembly configured to receive a manually controlled input that varies the braking output, the primary valve assembly including:
 - (i) a first spool valve configured to vary the braking output according to the manually controlled input; and
 - (b) a secondary valve assembly integral with the primary valve assembly, the secondary valve assembly being configured to receive input signals from a programmable electronic controller, the secondary valve assembly including:
 - (i) a second spool valve configured to operate with the primary valve assembly; and
 - (ii) an actuator for engaging and actuating the second spool valve according to the input signals received from the programmable electronic controller such that the second spool valve assists the braking output produced by the primary valve assembly.
10. (Twice Amended) An electronically enhanced brake valve for controlling a braking output to a vehicle having at least one wheel, the brake valve comprising:
 - (a) a primary valve assembly configured to receive a manually controlled input that varies the braking output, the primary valve assembly including:
 - (i) a first spool valve configured to vary the braking output according to the manually controlled input; and
 - (b) a secondary valve assembly configured to receive input signals from a programmable electronic controller, the secondary valve assembly including:
 - (i) a second spool valve configured to operate with the primary valve assembly; and
 - (ii) an actuator configured to [a solenoid actuator having a coil and an armature for engaging and actuating] engage and actuate the second spool valve

according to the input signals received from the programmable electronic controller such that the second spool valve [assists] increases the braking output produced by the primary valve assembly.

13. (Amended) The brake valve of claim [10] 25, wherein:
 - (a) the programmable electronic controller is configured to receive input from one or more electronic sensors such that the secondary valve assembly modulates the braking output produced by the primary valve assembly according to preset values.
14. (Amended) The brake valve of claim [10] 25, wherein:
 - (b) the programmable electronic controller is configured to receive input from one or more vehicle control systems such that the secondary valve assembly modulates the braking output produced by the primary valve assembly according to preset values.
17. (Amended) The brake valve of claim [10] 25, wherein:
 - (b) the programmable electronic controller is configured to receive input from a serial control device such that the secondary valve assembly modulates the braking output produced by the primary valve assembly in real-time.
18. (Amended) The brake valve of claim [10] 25, wherein:
 - (a) the programmable electronic controller is configured to receive input from one or more electronic sensors such that the secondary valve assembly modulates the braking output produced by the primary valve assembly in real-time.
19. (Amended) The brake valve of claim [10] 21, wherein:
 - (a) the first pressure source is system pressure; and
 - (b) the second pressure source is ambient pressure.

Claims 24-36 are new.